MASSACHUSETTS ADOLESCENT PREGNANT AND PARENTING SYSTEM

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MASSACHUSETTS ADOLESCENT PREGNANT AND PARENTING SYSTEM PRELIMINARY REPORT

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REPORT ON THE MASSACHUSETTS ADOLESCENT PREGNANT AND PARENTING STUDY

The purpose of this report is threefold:

- to describe the development and components of the ongoing data collection system currently used by all adolescent pregnancy and parenting programs funded by the Division of Family Health Services, DPH;
- to give findings for 743 clients who entered the program while pregnant and had live births between October, 1982 and September, 1984; the analyses focus on the relationships among the adolescent mothers on birth outcomes, services used by them during the prenatal period and their socioeconomic and demographic characteristics;
- to make recommendations concerning the adolescent health programs.

Background

Massachusetts has experienced a decline in the overall rate of teenage childbearing since 1970. This decline is mainly a result of the decrease in births to older teens, aged 18 and 19 years. Births to 16 and 17 year olds decreased at a more moderate rate and a slight rise occurred in births to younger teens aged 12 to 15 years (Table I).

While the birth rate to teenagers in Massachusetts declined during this decade, second and higher order births increased from 13.1% of all teen births in 1970 to 24.2% in 1980 and comprised 16.3% of teen births in 1983. Between 1970 and 1980 the rate of unwed births rose 35% for those under 18 years old and 48% for 18 and 19 year olds. Massachusetts is, for the most part, a reflection of the national trends.[1,2]

In Massachusetts, in 1983, 6,919 infants were born to women in their teenage years. Of these women, 2,345 were under the age of 18 and 341 were under the age of 16. Of all births to teenagers, 1,127 were second or higher order births.

Pregnant teenagers are more than four times as likely to have inadequate or no prenatal care as older women (Table II). In addition, they are more than fifty percent as likely to have low birthweight babies (Figure 1).

The high rate of low birthweight babies born to teenage mothers remains a persistent problem. In 1983 rates were 13.2% for women 15 years and younger,

8.7% for 16 and 17 year olds and 7.9% for 18 and 19 year olds compared with a rate of 5.6% for women over age 19. Low birthweight babies have both higher rates of infant mortality and increased morbidity.[3,4]

The burden of school-age childbearing falls heavily on the poor and the black. Among the youngest women, blacks have the highest birth rates. For all those under 16 years, black childbearing is at a rate 6 times that of white teenagers. Over 42% of the babies born to black teenage mothers are born to young women between the ages of 12 and 17 years (Figure 2).

Recent studies have shown that teenagers can have better pregnancy outcomes. Socio-economic status, race, unwed marital status, inadequate prenatal care and multi-parity contribute to both the poorer health and the poorer pregnancy outcomes of teenage women. Major complications of teenage pregnancies, such as hypertensive disorders, toxemia, pre-eclampsia and anemia, are believed to be associated with the poor nutrition, biological immaturity, smoking and inadequate prenatal care often found in teenage mothers. These young women are also likely to be unmarried, have a low socio-economic background, and have either limited access to health care or poor utilization of available health resources. It is these social rather than biological factors that place young mothers at risk.[5-8]

School-age mothers remain at risk in the mid 1980's for a compromised future. The probability of high school completion, employment and/or a stable marriage remains remote. Welfare dependency, inadequate housing, lack of day care, and insufficient opportunities for flexible school arrangements which would enable the teenage mother to continue her education, all remain issues confronting young mothers. In addition, teenagers are at risk for giving birth to premature or low birthweight infants. The high rate of infant morbidity associated with these outcomes implies that many adolescent mothers must learn to cope with infants with special needs.[1, 7-9]

The advent of childbearing interrupts the adolescence of the young mother and immediately introduces new responsibilities around the care of her baby. The young mother is often cast into an irreconcilable conflict of roles. This conflict is characterized by remaining a dependent minor vis-a-vis certain school, financial and health care decisions and assuming the new role of an adult suddenly responsible for making all the decisions relating to the care of a child. This conflict is exacerbated by the lack of financial, housing and day care resources. The psychological burden adds stress to an individual who is already struggling with the normal developmental tasks of adolescence. The problems which arise because the adolescent mother functions as both a parent and a teenager have been well documented in the literature.[1,5-9]

Despite the problems in conducting methodologically sound research, evaluations of specially designed programs for pregnant and parenting teenagers have demonstrated that providing health and support services during pregnancy and in the postpartum period can help school-age mothers to improve their outcomes in a variety of areas.[8, 10-13] Longitudinal evaluations of secondary prevention programs show that providing support services during the prenatal and postpartum period can help school-age mothers to complete their education, reduce the number of subsequent pregnancies, and increase economic independence.[11-13]

The Federal government established the Office of Adolescent Pregnancy Prevention in 1978 with legislation and funding of the Title VI programs. The legislation supported educational services for the prevention of adolescent pregnancy and social services for pregnant and parenting teenagers, their children and their families. Three agencies in Massachusetts received funding under this legislation: St. Margaret's Hospital in Boston, Family Planning Services of Central Massachusetts (FPSCM) in Worcester and the County Adolescent Network of the Berkshires (CANBE). The creation of the Maternal Child Health (MCH) Block Grant, in 1982, placed the funding for these three programs into the Massachusetts MCH Block Grant. These three programs received contracts for one year to assure continuity of service.

Massachusetts Programs for Pregnant and Parenting Teens

The Division of Family Health Services (DFHS) has been committed to serving adolescents through comprehensive adolescent health programs and services for pregnant and parenting adolescents since the early 1970's. The goal of the Division has been to support primary prevention as much as possible through a combination of health care services and educational activities.

Pregnant and Parenting Adolescent Programs (PPAPS) have been developed in Massachusetts to encourage and support young women through the bureaucratic labyrinth of health and social services. These programs offer a panoply of services and provide a continuum of care to the young mother, her baby and her family. Case management is provided with health, educational and psychosocial services coordinated and tailored to the individual client's needs. Special efforts are made, through community contracts, to identify the young woman early in her pregnancy, engage her in the program and maintain contact. Continuity of care is provided not only throughout her pregnancy, but through a two year postpartum period.

Adolescent programs are developed by coalitions. Pregnant and Parenting Adolescent programs, in particular, serve their clients through an intricate and often complex network of agencies. A unique coalition model exists in Haverhill where three independent organizations, a hospital, a visiting nurse association and a family planning agency, receive funding through one contract to provide a continuum of services to the same clients. In order to extend the comprehensive nature of their services, DFHS programs have linkages with Adolescent and Young Parent programs funded through the Department of Social Services (DSS). Some agencies receive funding from both DFHS and DSS. This has enabled communities to increase their ability to provide the range of services required by young parents in a coordinated manner. Another example of the coalitions is the Consortium for Pregnant and Parenting Teens, a Brigham and Women's Hospital contract composed of four sites with a special contract for home visiting and outreach with the Boston Public Health Nurses.

Home visiting and teen-tot clinics are two aspects of the PPAP programs which distinguish these adolescent programs from the usual model of prenatal and post partum care. Home visiting during both the prenatal and post-delivery periods allows the nurse and/or social worker to understand the home conditions and family dynamics with which her teenage client is coping more readily than through office interviews. The home visit presents an opportunity for individual counseling, education (prenatal, child care,

parenting and homemaking skills, nutrition, family planning), performance of assessments on the health of the mother and child, and interaction with family members and others living with the client. The atmosphere of the home visit encourages development of a more open and trusting relationship between the young woman and her "worker" than the more formal atmosphere of the office.

In order to increase post delivery contact with the school-age mother and assure optimal health care for both herself and her baby, the teen-tot clinic model which requires mother and baby to be seen in concert has been integrated into the program services.[14] Treating the mother and baby as a unit assures recognition of the situation that the mother is functioning as both an adolescent and a parent and encourages the health care provider to be sensitive to the level of knowledge and understanding the particular school-age mother has of child care. During the same visit the health care needs of the mother, including family planning, can be addressed. Counseling, social service assessments or referrals may be provided. Four of the nine adolescent parenting programs are currently utilizing this model; all four are in the Boston area. (See Appendix A program descriptions).

Massachusetts System of Data Collection

Committed to continuity of service under the block grant mechanism, staff from the Division and consultants from the Harvard School of Public Health began meeting with the programs to discuss data collection to assure program evaluation. Under federal legislation data had been required to be collected on an aggregate basis. Meetings were held with program directors and staff from both the state and federally funded programs, Division staff, adolescent health experts, and evaluation specialists.* A decision was made to continue to collect data utilizing an improved and simplified standardized case record data collection system for use on a statewide basis.

This case record system would provide greater capacity for analysis and document the progress of school-age mothers in programs, demonstrate effective interventions, and serve as a case management system. This system is called the Massachusetts Adolescent Pregnancy and Parenting System, known as MAPPS. The MAPPS data collection system started in October 1982, and is used by all adolescent pregnancy and parenting programs funded by the Division of Family Health Services in the Massachusetts Department of Public Health. The system was designed to provide information to the individual programs and the state office administering the programs so that management and programmatic decisions could be made more responsibly.

In the federal fiscal year 1984 (October 1, 1983) the programs were expanded. Twenty-three sites were funded under the model of Pregnant and Parenting Adolescent Programs (PPAP) and required to use the new data system, MAPPS. Clients who are pregnant, aged 18 years or younger and have not yet completed high school are entered into MAPPS.

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The specific goals of the MAPPS system are: (1) to document short and long term outcomes of teenage pregnancy in Massachusetts for the mother and her baby; (2) to examine relationships between specific biosocial factors, services received and the various outcomes; and (3) to plan for future health programs for this population.

Data collection for each program client is completed at intake (during pregnancy), at birth, and at six, twelve, eighteen and twenty-four months post delivery. Information is being collected on each client's demographic, socioeconomic and educational status as well as the social and health services received between data points. See Table III for the specific variables collected at each time point. "Sociodemographic information" includes age, ethnicity, marital status, living arrangements, mobility and household composition. "Supplementary income sources" includes Aid For Dependent Children (AFDC), Medicaid, Food Stamps, Special Supplemental Food Program for Women Infants and Children (WIC), Supplemental Security Income, Social Security, Unemployment Insurance and General Relief. "Substance use" includes tobacco, alcoholic beverages, marijuana, other illegal drugs, and medications. "Prenatal care information" includes trimester prenatal care began, provider of prenatal care, planned pregnancy, use of birth control, use of Diethylstilbestrol by client's mother, and plans for the pregnancy and post delivery. "Services received" includes counseling, home visits, support groups, and prenatal and parenting education services which may be provided by either the funded agency or other agencies in the community; each agency involved with the client is noted on the forms. "Birth outcomes" includes birthweight and gestational age, as well as maternal and infant complications. Maternal complications of pregnancy and delivery include inappropriate weight gain, anemia, pre-eclampsia or eclampsia, Cesarean section delivery, hemorrhage or premature labor, and multiple births. Infant complications such as apnea, respiratory distress syndrome, neonatal pneumonia, sepsis, jaundice requiring transfusion, and congenital defects are documented. Use of a neonatal intensive care unit is recorded. "Baby's health" includes selected Denver Developmental Milestones and any hospitalizations or emergency room visits. "Parenting behaviors" includes the level of well child care for the baby, as indicated by immunizations, diagnostic screenings, abuse and neglect reports and protection orders filed.

The variables described include both the short and long term outcomes of school-age pregnancy which the MAPPS seeks to document. The short term outcomes assessed are infant mortality, low birthweight and perinatal complications. The long term outcomes are educational status, economic independence, repeat births, and parenting behaviors. These outcomes will be examined by the level of prenatal care received, socioeconomic and demographic data, and program inputs such as counseling and health services received.

The system was designed to give aggregate information, which can be used for ongoing management decisions and program evaluation, as well as individual client information for case management and individual service planning. Technical assistance has been provided to the programs since the inception of the data collection system to help with collection and interpretation of data. Program feedback is available on request to the state office; aggregate data for the programs has been publicly presented once each year.

Key to the success of the program is the development of a system on the state level to review, correct, code, enter and analyze the data. This system requires commitment and time by program and data staff. Reliability checks must be built into the system to assure validity of the data.

The data collection system, which is similar to that used in other longitudinal evaluations such as those of the Too Early Childbearing Network programs,[13] has been adopted for use in Maine's adolescent pregnancy programs and is being considered for use by several other states and by the Department of Health and Human Services Office of Adolescent Pregnancy Programs.

Since the MAPPS began in October 1982, 3000 clients have entered the state-funded programs. The purpose of this report is to give the findings for 743 clients who entered the program while pregnant and had live births reported prior to October, 1984. Data from the intake and birth outcome forms will be used to answer the following questions for this initial group of births.

1. What are the descriptive characteristics of the clients in the state programs?

2. What are the services used by these clients during the prenatal period? How do they vary by age, race and other characteristics of the clients?

3. What are the birth outcomes of these clients? How do these vary by age, race and other characteristics of the clients or services received?

Findings

Descriptive Characteristics of Clients at Intake and Birth

By September 30, 1984, 1533 school-age women had entered the study. This report is based on 743 white, black and Hispanic respondents with live births reported prior to that date, who had entered the programs during pregnancy and had not completed high school or received a Graduate Equivalency Diploma (G.E.D.) at the time of intake. Another group of young women who became known to the programs at delivery or postpartum has been excluded from the present analysis. Approximately 44% (328) of the sub-sample of 743 young women received services from Boston based programs, 44% (330) from programs located in smaller Massachusetts cities (Worcester, Springfield, Haverhill) and 11% in rural settings. At the time of delivery approximately 15% (113) were aged 15 years or younger, 57% (422) were 16 or 17 years old and 28% (207) were eighteen or nineteen years old. The majority, 61% (451), of the sample is white (non-Hispanic); 26% (192) are black and 13% (100) are Hispanic (Table IV).

In response to intake questions about living arrangements, 16% (117) of

the young women reported living alone or with a male partner; 27% (198) were in a two parent family and 37% (275) lived in a single parent household headed by their mothers. Twenty percent (151) reported other living arrangements such as foster care, group residences or the family homes of their male partners (Table IV). At delivery, 28% (200) reported living alone or with a male partner, 19% (134) were in a two parent household and 36% (256) lived in a female headed, single parent household (Table IV).

Sixteen percent (114) of the sample were married by delivery compared to 10% (71) at the time of program entry. At intake, 93.5% (693) were nulliparous; however, 20% (146) of the young women reported having had a previous pregnancy. Only 30% of the sample reported ever using any form of contraception (Table IV).

A majority of the young women in this sample had left school by the time of delivery. Forty-one percent (305) of the young mothers had dropped out of school at the time of intake and another 3% (23) dropped out prior to delivery; 44% (325) remained in school. Twelve percent had graduated by the time of delivery (Table IV).

A large percentage of the young women were receiving financial assistance from government programs at the time of delivery. Sixty-three percent (451) were receiving Medicaid, 54% (381) reported receiving Aid For Dependent Children (AFDC), and over 68% (487) were in the Special Supplemental Food Program for Women Infants and Children (WIC) at that time.

Older participants, who are 18 or 19 years old, present a somewhat distinct profile from the younger women. They are more likely to be white, to live outside their parental household and to be out of school. In addition, older participants are more likely to have used birth control, to have had a previous pregnancy and to have experienced a prior live birth (Table V). Women 18 years and older were significantly more likely to receive Medicaid and AFDC benefits than their younger counterparts (Figure 3). There is a trend in the same direction for WIC registry. They also reported more use of tobacco, alcohol and illegal substances than the younger respondents (Table VI).

The majority (almost 61%) of the MAPPS participants are white (non-Hispanic); almost 26% are black and over 13% are Hispanic. For all ethnic backgrounds, the largest proportion of teenage mothers is in the 16-17 year old group. However, only about 10% of the white mothers are 15 years old or younger, while 24% of the black and 20% of the Hispanic mothers are in this young age group (Table VII).

There were important differences between the white, black and Hispanic mothers in our sample. Hispanic women report more previous pregnancies and births. They are more likely to be married but report less experience with contraception than non-Hispanic women. There is a striking difference in the living arrangements of the black MAPPS participants compared to the white and Hispanic MAPPS women. Black young women are more than twice as likely to be living in a single female headed household and virtually none of them are married. While over 79% of black respondents are attending school, 61% of white non-Hispanic women in our study have dropped out of school prior to

intake (Table VII). A significantly higher proportion of women of Hispanic origin receive Medicaid, AFDC, and WIC (Figure 4). Hispanic women also report significantly less use of tobacco and alcohol (Table VIII), (Figure 5). While white respondents are the most likely to use substances, black respondents have a higher proportion of users who say they quit smoking, drinking, and using marijuana during pregnancy (Table VIII), (Figure 6).

Birth Outcomes

Nearly half of the sample registered for prenatal care during the second or third trimester of pregnancy (Table IX). Fifty-two percent (381) of the sample began prenatal care during the first trimester, 37% (270) during the second, and 11% (83) during the third. Four subjects reported receiving no prenatal care. The median number of prenatal visits was 10 with a range of 0 to 29 visits (excluding hospitalizations). An adequacy of care variable was constructed using trimester of entry for prenatal care, number of prenatal visits, and gestational weeks. The formula used for MAPPS is the same formula that is used by the National Center for Health Statistics and the Massachusetts Department of Vital Statistics.* Less than half of the respondents, 44% (324), received adequate prenatal care, 38% (283) received intermediate care and 17% (128) received inadequate or no care.

Most of the young mothers, 84% (621), experienced no complications of labor or delivery. The Cesarean section rate was 11% (82). Of the babies born, 10% (75) were considered to be of low birthweight (<2500 grams).

Mothers, under 16 years, had a higher percentage of intermediate, inadequate or no care and exhibited a trend toward a higher proportion of Cesarean sections and birth complications except low birthweight than older teenage mothers in our study. In contrast, older mothers experience a higher rate of low birthweight babies.

The black women in our sample have significantly lower rates of adequate prenatal care (Table X). Blacks have the highest rate of low birthweight babies; however, the numbers are small and the difference is not statistically significant. Although Hispanics have the lowest rate of low birthweight babies, they have significantly more Cesarean sections (Table X).

While bivariate analysis revealed many important relationships among client characteristics and birth outcomes, multiple regression analyses were performed in an attempt to examine individual contributions of several variables to two of the more important outcomes, adequacy of care and birthweight.

Adequacy of prenatal care was selected because it is an important predictor of birth outcomes and is subject to direct programmatic influence. For this analysis, adequacy of care was collapsed to a dichotomous variable

*Adequacy of care is based on the trimester of entry into prenatal care and the number of prenatal visits kept and adjusted for the gestational age (number of weeks at delivery) of the infant.

with 1 indicating adequate or intermediate prenatal care and 0 indicating inadequate or no prenatal care. Table XI summarizes the results of this analysis. When only the four variables (age, ethnicity, prenatal home visits and WIC) which contribute significantly to the model are included, the overall R^2 is small (0.0639) but statistically significant. It is particularly important to note that WIC and prenatal home visits emerge at significant levels when controlling for age and ethnicity.

Birthweight is, in itself, a major pregnancy outcome since low birthweight is associated with infant mortality and morbidity. For this multiple regression analysis birthweight is a continuous variable measured in grams summarized in Table XII. The R^2 for the more parsimonious model is again small (0.040) but statistically significant. Controlling for other variables, three variables, ethnicity, substance use, and prenatal home visits emerge as significant predictors of birthweight.

Discussion

The MAPPS system is a case management tool, provides data to measure the effect of programmatic activities, and provides a set of standard measurements for the evaluation of programs. Because it requires periodic reporting on each client, the system functions particularly well as a case management tool. Clients who might otherwise be lost to follow-up are periodically brought to the attention of their providers due to the necessity of completing the forms. The system also helps individual clients since continuity of service is greatly facilitated by regular follow-up contacts. The case management aspect of the system benefits the provider and administrative agency as well by providing information regarding strengths and weaknesses of individual programs and program models.

Standardized data collected by all programs allows for comparison of aggregate data from the system (MAPPS) with other data bases as well as by program sites. Information is provided about whether programs are serving the targeted population and whether intervention strategies are achieving the desired results. In addition, administrators and policy makers may identify funding and service gaps. This information enables administrators to design and fund programmatic activities which address such issues. The collection of standardized information also provides an opportunity for the administrative agency to develop a set of service standards for the purpose of establishing criteria useful for the evaluation and monitoring of programs.

It should be recognized, however, that a major commitment is required on the part of the administrative agency to provide the resources to design, implement, and maintain a standardized system. Specifically, data entry, computer time, printing, and photocopying, in addition to staff involvement at all levels, requires a considerable investment of personnel and financial resources.

Our findings have highlighted some significant ethnic and cultural lifestyle differences. One striking difference is in the living arrangements of the black MAPPS participants compared to the white and Hispanic MAPPS women. Black young women are more than twice as likely to be living in a

single female headed household and virtually none of them are married. In addition, white non-Hispanic women in our study are more than twice as likely and Hispanic women three times as likely as black women to have dropped out of school prior to intake. These major differences may be expected to influence long term outcomes and may need to be considered in program planning.

The lack of use of any form of birth control prior to pregnancy is consistant with findings in other studies[1,9] Despite the legal availability of contraceptive information and services, it is clear that male and female adolescents are currently not accessing such services. The need for additional initiatives to address this issue is clear.

Considering that this population faces a pressing need for economic self-sufficiency, the extremely low proportion of women who have received vocational education is remarkable. Only the white sub-group has had any access to this training. It is unclear whether this is a reflection of cultural lifestyle or social opportunity.

The proportion of MAPPS participants who receive inadequate prenatal care is higher than the state rates of inadequate care for all age and ethnic categories of 12-19 year old women. This is expected because our programs are serving young women who would otherwise fall through the cracks. Unfortunately it is often rather late in their pregnancies before they become known to the MAPPS programs. Indeed, an entire group of young women has been excluded from this analysis because they did not become involved in MAPPS programs until after delivery.

A major source of referral has been the WIC staff. MAPPS participants have a high rate of WIC registration (68%), a reflection of a situation in which the staffs of the two programs work closely together. Most MAPPS clients are eligible for WIC; the most common explanation for non-participation in WIC is registration very late in pregnancy.

MAPPS clients also have high participation rates in other government subsidy programs such as Aid For Dependent Children (AFDC) and Medicaid. Utilization follows an expected pattern; older adolescents who are more likely to be on their own are receiving more governmental assistance. Independent household status is reflected in the high rate of AFDC participation for women over 18 years of age. Hispanic women, who are least likely to be living with their parents, are more likely to receive government subsidies including WIC, AFDC, and Medicaid.

Reported substance usage for participants is similar to rates reported in other studies of adolescent substance use[15,16] In MAPPS, information is collected at all time points, with a major increase in reported usage between intake and delivery. We believe this is a reflection of the trust which develops in the relationship between the client and her provider, rather than an actual increase in substance use.

Nearly half the population reported smoking while pregnant; only 12 percent quit during pregnancy (despite emphasis by all prenatal care providers on the effects of substances upon birth outcomes). Although this rate of quitting is disappointingly low, women 15 years and younger, and black women

in general, were most likely to quit use of tobacco, alcohol, and marijuana during pregnancy (Figure 7). Black women who smoked were more than twice as likely as Hispanic and almost three times as likely as white non-Hispanic smokers to quit (Figure 6). Intervention appears to be more effective for this subgroup of young, black women. It should be noted that the black subsample is, on average, younger than either the white non-Hispanic or the Hispanic group. Intervention appears to be more effective for this subgroup of young, black women. This group tends to be living in parental households; it is our conjecture that the family's influence contributes to the young woman's willingness to relinquish the use of substances. There is no bivariate relationship between substance use and low birthweight in the MAPPS population. However, substance use is related to age and ethnicity, and when controlling for these and other factors using multiple regression analysis, it is significantly related to low birthweight.

The average age of the MAPPS population is younger than that of the total population of adolescent mothers in Massachusetts as a result of the eligibility restrictions. This sample also contains a larger proportion of minority women than the population as a whole. The birth outcomes reflect this skew in the elevated overall rates of low birthweight and inadequate care. It is interesting to note that, for women 15 and younger, the proportion of low birthweight babies is somewhat lower in the MAPPS group than in the state at large. It is possible that this is attributable to program input. However, among women 18 years and older, the MAPPS participants have a somewhat increased rate of low birthweight babies than their statewide counterparts. This may be a reflection of criteria for MAPPS eligibility; the MAPPs population older than 17 years may be a particularly high risk group. There is a high proportion of high school drop outs among these older participants. Nearly half of them are living away from their parental families. When compared to MAPPS participants under 16 years old, they are more than twice as likely to report use of tobacco and alcohol during pregnancy, and much less likely to stop using these substances before delivery.

Minority women in MAPPS programs seem to have fewer low birthweight babies than minority school-age mothers in Massachusetts. In 1983, the low birthweight rate for black and Hispanic women less than 19 years of age was over 12.5%. The comparable rates in the MAPPS population are 11.5% for black and 8% for Hispanic school-age mothers. On the other hand, the low birthweight rate for white MAPPS participants is 10% compared to a rate of 7% in the 1983 state population. It is possible the older age and greater use of substances among this MAPPS sub-group is reflected in these statistics. The elevated rate of Cesarean section among Hispanics is consistent with the state data for Hispanics.[17]

The school-age mothers included in MAPPS are at high risk for receiving inadequate prenatal care and delivering low birthweight babies. When multiple regression was utilized to explore the impact of client and program characteristics on these variables, several important relationships emerged. Although ethnicity is significantly related to adequacy of care and birthweight, several factors subject to programmatic influence were also important predictors. Receiving WIC and receiving one or more home visits significantly increased the probability that a young woman received adequate prenatal care. A prenatal home visit was significantly related to increased

birthweight as well.

The results of this analysis suggest that program input can have an impact on school-age pregnancy outcomes. The implementation of a statewide monitoring system makes it possible to continue to assess program impact and the relative significance of different program components. Because MAPPS requires program follow-up for two years post delivery, future analysis can consider long-term outcomes such as school completion, repeat pregnancy and economic independence.

Recommendations

School-Based Programs need to be designed to reach youngsters during or before puberty and prior to school drop-out.

As effective as the best program might be in achieving healthy outcomes for the school age mother and her baby, and in helping the new mother to achieve her long term goals of school completion and economic independence, primary prevention remains the preferred goal. As the MAPPS data indicates, two major issues which demand attention are the high rate of school dropout prior to pregnancy and early sexual activity without responsible contraception. Programs need to be designed to reach youngsters during puberty and prior to school dropout, while they are in grades 5 through 8. Such programs need to address youngsters who are not achieving well in school in order to avert repeated failure which leads to dropout. Programs need to include life options which are presented in a manner which helps young people perceive opportunities to complete education and career training in order to achieve an improved lifestyle. Concurrent training in decision making skills empowers the young person to make responsible choices around issues such as drugs, alcohol, and sexual activity. To help adolescents make and implement responsible decisions, information and services, such as family planning, need to be readily available and accessible. As young people are in school for a major portion of their days, the obvious implication is that services should be in the schools.

Vocational education, which is an important aspect of both primary and secondary prevention, is a productive avenue for those not college bound who might otherwise drop out of school. For those who are pregnant or parenting and need a rapid route to economic independence, vocational education provides the ticket to a job. A recent study found that those who acquired a high school diploma earned on a average only 200 dollars more per year in average earnings than those who dropped out of high school.[18] However, those who received job training and acquired a skill greatly increased their earning potential. It is possible that we need to reconsider the advantages that vocational education can offer those attending large urban schools, such as the population described in this document. We also need to consider whether, where such programs are available, there are barriers that prevent utilization by this population.

Home Visits by Public Health Nurses to Pregnant and Parenting Teens Need To Be A Major Program Component

Historically, public health nurses utilizing home visiting were an important facet of any maternal and child health program. Our findings reaffirm the value of this mode of intervention. Clients such as those in the MAPPS population often have difficulty accessing services. They may lack transportation, have disorganized lives, and come from multi-problem families, and therefore need services brought to them in the form of a visiting nurse/social worker. Thus, home visiting provides an appropriate setting for direct services as well as an opportunity for the provider to make an assessment of the individual's needs within the context of the family. Although at first glance it may appear that this is an expensive and time consuming intervention strategy, in the long run it may be cost effective in that the individuals most in need of both health and psychosocial services will receive them. More expensive alternatives, such as residential care and hospitalization, may thus be averted.

WIC Access Needs to be Increased

Another important program which has been affirmed by our findings is WIC. WIC, like home visiting, is a factor related to adequacy of care which is subject to programmatic influence. Eligibility is rarely the issue; accessibility and bureaucratic barriers sometimes delay the acquisition of this valuable service. It would be highly desirable for both mother's and baby's health to obtain WIC early in the pregnancy. It is key to minimize the time between pregnancy verification, WIC registration and issuance of the vouchers. In her efforts to obtain her vouchers in a timely manner, the school age mother may encounter many obstacles, such as transportation, scheduling, and a disorganized lifestyle. Once again, the public health nurse could play an important role by delivering vouchers during her home visits. This would indeed be an incentive for the young woman to be at home when the nurse is expected, without requiring a major effort in organizing her time and transportation.

A significant aspect of the WIC program is its role in case finding for adolescent programs. The problem of late identification of pregnant school-age women is persistent and is well documented by the MAPPS. Early registration is a necessity for optimal prenatal care. Resistance, denial and lack of information on the part of the expectant adolescent often contribute to delay into the second trimester before seeking care. Only education and aggressive program outreach can address these barriers to early case finding.

Once the young woman acknowledges the reality of a possible pregnancy, serious obstacles emerge which prevent access to necessary services. In addition to her own difficulty and ambivalence in involving her family in her pregnancy, the expectant adolescent will encounter social stigmata and economic obstacles. In areas where health centers and clinic services are not readily available, she may be unable to find a provider of prenatal care without a substantial down payment. Even if she is able to arrange care, referral mechanisms within communities are inconsistent. Many medical

providers do not acknowledge the benefits of comprehensive services for their patients. The impact of the FY86 Massachusetts legislative funding for prenatal care for uninsured women remains to be seen. It is to be hoped that this new reimbursement and case management system will serve to bring school age mothers into care earlier and increase the referral of these women to available services.

Appendix A - Description of Programs

Early Childbearing Program (Health Care of Southeastern Mass)

Health Care of Southeastern Massachusetts, a family planning agency, administers the Early Childbearing Program in two localities. Visiting nurses and social workers function as a team to provide education and counseling to individuals and groups in the Falmouth area and the city of Taunton. Services offered include: case management, prenatal and postpartum home visits by a registered nurse, pediatric developmental assessments, crisis intervention, individual and family counseling, weekly prenatal and young mothers groups, advocacy through the medical, welfare, legal, educational, vocational, child care, transportation, and housing systems, consultation to local schools, and resource education programs for teachers and the staff of local community agencies. Additional services are provided on a referral basis.

Consortium for Pregnant and Parenting Teens (Brigham & Women's Hospital)

The Consortium for Pregnant and Parenting Teens (CPPT) is composed of four sites, the Adolescent Reproductive Health Service of Brigham and Women's Hospital, Crittenton-Hastings House, Brookside Park Family Life Center, and Southern Jamaica Plain Health Center, and an agreement with the Boston Public Health Nurses. The Adolescent Reproductive Health Service is part of the gynecological and obstetrical services of the Brigham & Women's Hospital. Prenatal and post-delivery health care is coordinated with counseling and case management through the social services department of the hospital. Brookside Park and South Jamaica Plain are two health centers with a full scope of midwifery services, pediatric care, counseling, and mothers support groups. Brookside Park offers a "Young Families Clinic" with a team of practitioners providing integrated services beginning with prenatal care and continuing with post-delivery services to both the teen mother and her baby. The Boston Public Health Nurses provide follow-up through home visiting for the Consortium and other adolescent programs in the city.

Young Parent Program (Children's Hospital)

A hospital based "teen-tot" clinic which provides health care for the mother and her baby as a family unit. Integrated medical and social services are delivered to teenage mothers and their babies at the same site by the same staff. This clinical model is based on the theory that teenage mothers can be engaged through their children's health care thereby improving access to services for both.

Healthworks

Administered by a family planning agency, this program coordinates Department of Social Services (DSS) and Department of Public Health (DPH) contracts to provide health and social services in the Haverhill area. Three agencies share funding in order to provide a continuum of coordinated services. The Hale Hospital offers prenatal and post-delivery care to the teen, Healthworks provides individual and group counseling, and the North Shore Visiting Nurse Association delivers follow-up, educational and assessment services through home visiting.

Access (Health Awareness Services of Central Massachusetts)

The Access program utilizes the prenatal medical care model as a base on which to build a comprehensive service network for teens and their families and partners. Access is administered by a family planning agency which receives money from both the Department of Social Services and the Department of Public Health in order to offer coordinated medical and counseling services. Counselors are located at two hospital based prenatal clinics and a health center with a family practice model. The counselors serve as advocates and case managers in assisting each teen throughout her pregnancy and for two years post-delivery. Educational, counseling and social services are available within a large community network of agencies which include an alternative school, child care agencies and visiting nurse associations. The counselor aids teens in completing their high school academic requirements by linking with supportive personnel in guidance and child study departments in the local high schools or through referral to an alternative school.

SAFE (Family Planning Council of Western Massachusetts)

Project SAFE (Services for Adolescent Family Enhancement) is the outgrowth of a coalition of organizations and individuals, the Teenage Pregnancy and Prevention Alliance of Greater Springfield (TAPPA) and is administered by the Family Planning Council of Western Massachusetts. Project SAFE provides coordinated case management, advocacy, counseling, follow-up and education for pregnant and parenting teenagers in the greater Springfield area. In conjunction with cooperating agencies, SAFE provides screening and assessment; referral to appropriate medical, educational, vocational and housing services; and an in-depth follow-up procedure to ensure that services are rendered. SAFE offers a weekly parenting group, a peer education group, and a teen parent support group. The Project SAFE network offers a 3-month short-term counseling unit for stabilization, an alternative education program in conjunction with the Springfield School Department, and long term counseling support services until 2 years postpartum. Project SAFE's services are integrated with existing community services by placement of program staff in neighborhood agencies: the Spanish American Union, the YWCA's P.A.G.E. Program, and the Springfield WIC Program.

County Adolescent Network of Berkshires (CANBE)

County Adolescent Network of Berkshire is a coalition of 34 agencies working together with common goals. Services are delivered in three predominantly rural county sites. Visiting nurses and social workers provide education and counseling to individuals and groups, offering GED preparation, an alternative school and child development activities.

The North County coordinator, located in the county of North Adams, assumes primary responsibility for case management and counseling. In addition to intake, referral, follow-up and home visits, the coordinator works cooperatively with collateral agencies to provide needed services such as Childbirth Preparation, Parenting Skills Education and GED tutoring.

Central Berkshire county includes a drop-in center in Pittsfield where short-term counseling and referrals are available. The Pittsfield Visiting Nurse Association provides the case management and home visiting services in conjunction with an alternative school and a rich mixture of health and social services agencies in the area.

South Berkshire, the most rural of the three sites, is served through the Southern Berkshire Visiting Nurse Association. Outreach, case management and home visiting are coordinated with the services of the other local agencies.

Coalition of Adolescent Services - Trustees of Health and Hospitals

The Coalition of Adolescent Services is a joint effort of four independent service sites to network and provide comprehensive services to adolescents. Three of the sites, 2 health centers and a city hospital have programs designed for pregnant and parenting teens.

The hospital offers adolescents comprehensive services, in a clinic setting, which includes prenatal care with high risk cases followed jointly by a perinatalogist and midwife; social services and a nurse practitioner run teen-tot clinic.

Table I

MASSACHUSETTS RESIDENT BIRTHS BY AGE OF MOTHER[1]

Year	Total Births	Birth Rate All Ages	Births to Women Under 20	Birth Rate 15-19
1970	93,582	80.2	10,257	39.2
1975	68,070		8,667	
1980	72,591	53.5	7,765	28.1
1983	76,031		6,919	

TEENAGE BIRTHS BY YEAR
(Age in Years)

Year	12-15	16-17	18-19	Under 18 as % of Under 20
1970	401	2,528	7,328	28.6
1975	429	2,593	5,645	34.9
1980	371	2,100	5,294	31.8
1983	341	2,004	4,574	33.9

[1]Annual Report of Vital Statistics - 1983

Table II

TEENAGE BIRTHS: MASSACHUSETTS-1983

ADEQUACY OF PRENATAL CARE BY AGE

Age	Adequate (n)	%	Intermediate (n)	%	Inadequate or None (n)	%
≤15	(141)	42.9	(124)	37.7	(64)	19.4
16-17	(985)	50.4	(759)	38.8	(211)	10.8
18	(1,076)	53.9	(741)	37.1	(180)	9.0
≥20	(55,864)	82.2	(10,371)	15.2	(1,739)	2.6

Source: Massachusetts Department of Public Health, Division of Health Statistics and Research.

Table III

VARIABLES COLLECTED IN MAPPS AT EACH TIME POINT

Variable	Intake	Birth	6 Months	12 Months	18 Months	24 Months
Sociodemographic Information	X	X	X	X	X	X
Relationship with Baby's Father		X	X	X		
X	X	X				
Educational Status	X	X	X	X	X	X
Employment Status		X	X	X		
X	X	X				
Supplementary Income Sources		X	X	X		
X	X	X				
Pregnancy History		X				
Substance Use		X	X	X		
X	X	X				
Prenatal Care Information			X		(X)	
(X)	(X)					
Services Received			X	X		
X	X	X				
Birth Outcomes			X		(X)	
(X)	(X)					
Repeat Pregnancy/ Birth				X		
X	X	X				
Baby's Health						
X	X	X		X		
Parenting Behaviors						
X	X	X		X		

(X) Asked only if there is a subsequent birth.

Table IV

MAPPS CLIENT CHARACTERISTICS AT INTAKE

10/01/82 - 9/30/84 (N=743)

	(n)	%
Age at Birth		
≤15	(113)	15.2
16-17	(423)	56.9
18+	(207)	27.9
Ethnicity		
White	(451)	60.8
Black	(192)	25.7
Hispanic	(100)	13.5
Gravidity		
0	(588)	80.1
1	(119)	16.2
2+	(27)	3.7
Unknown	(9)	
Parity		
0	(686)	93.5
1	(44)	6.0
2+	(4)	0.5
Unknown	(9)	
Birth Control Method		
None	(380)	59.0
Prescription	(181)	28.1
Non-Prescription	(83)	12.9
Unknown	(99)	
Marital Status		
Single	(672)	90.4
Ever Married	(71)	9.6
Unknown	(0)	
Living Arrangements		
Alone or with Partner	(117)	15.8
Client's Mother	(275)	37.1
Two Parent Home	(198)	26.7
Other	(151)	20.4
Unknown	(2)	
Educational Status		
In School	(436)	58.8
Out of School	(305)	41.2
Unknown	(2)	
Vocational Training		
In Training	(28)	3.8
Completed	(18)	2.4
None	(690)	93.8
Unknown	(7)	

Table V

CLIENT CHARACTERISTICS AT INTAKE BY AGE
10/01/82 - 9/30/84 (N=743)

	<15 n=113		16-17 n=423		18+ n=207	
	(n)	%	(n)	%	(n)	%
Ethnicity***						
White	(47)	41.6	(262)	61.9	(142)	68.6
Black	(46)	40.7	(107)	25.3	(39)	18.8
Hispanic	(20)	17.7	(54)	12.8	(26)	12.6
Gravidity[a]						
0	(99)	89.2	(345)	82.9	(144)	69.6
1	(11)	9.9	(59)	14.2	(49)	23.7
2+	(1)	0.9	(12)	2.9	(14)	6.7
Parity[b]						
0	(110)	97.3	(399)	94.3	(186)	89.9
1	(3)	2.7	(21)	5.0	(20)	9.7
2+	(0)	0.0	(3)	0.7	(1)	0.4
Birth Control Method***						
None	(73)	73.0	(229)	63.4	(78)	42.6
Prescription	(18)	18.0	(87)	24.1	(76)	41.5
Non-Prescription	(9)	9.0	(45)	12.5	(29)	15.9
Unknown	(13)		(62)		(24)	
Marital Status*						
Single	(107)	94.7	(387)	91.7	(177)	85.5
Ever Married	(6)	5.3	(35)	8.3	(30)	14.5
Unknown			(1)			
Living Arrangements***						
Alone or with Partner	(9)	8.0	(53)	12.5	(55)	26.8
Client's Mother	(52)	46.0	(164)	38.9	(58)	28.3
Two Parent Home	(29)	25.7	(149)	35.3	(50)	24.4
Other	(23)	20.3	(56)	13.3	(42)	20.5
Unknown			(1)		(2)	
Educational Status***						
In School	(85)	75.2	(259)	61.4	(92)	44.4
Out of School	(28)	24.8	(162)	38.6	(115)	55.6
Unknown			(2)			
Vocational Training						
In Training	(2)	1.8	(18)	4.3	(8)	3.9
Completed	(0)	0.0	(9)	2.2	(9)	4.4
None	(111)	98.2	(391)	93.5	(187)	91.7
Unknown			(5)		(3)	

*p<.05 **p<.01 ***p<.001

[a] When recorded as dichotomous, gravidity is significant at the p<.001 level.

[b] When recorded as dichotomous, parity is significant at the p<.05 level.

Table VI

SUBSTANCE USE REPORTED AT BIRTH BY AGE

10/01/82 - 9/30/84 (N=743)

	Total		<15 n=113		16-17 n=423		18+ n=207	
	(n)	%	(n)	%	(n)	%	(n)	%
Smoking (Tobacco)**								
Non-User	(382)	55.2	(71)	71.7	(213)	53.7	(98)	50.0
Use	(310)	44.8	(28)	28.3	(184)	46.3	(98)	50.0
Unknown	(51)		(14)		(25)		(11)	
Quit[a]	(38)	12.3	(7)	25.0	(22)	12.0	(9)	9.2
Alcohol**								
Non-User	(485)	70.6	(83)	83.8	(279)	70.6	(123)	63.7
User	(202)	29.4	(16)	16.1	(116)	29.4	(70)	36.3
Unknown	(56)		(14)		(27)		(14)	
Quit[a]	(28)	13.7	(3)	18.8	(17)	14.7	(8)	11.4
Marijuana								
Non-User	(581)	84.6	(86)	86.9	(335)	84.8	(160)	82.9
User	(106)	15.4	(13)	13.1	(60)	15.2	(33)	17.1
Unknown	(56)		(14)		(27)		(14)	
Quit[a]	(34)	32.1	(5)	38.5	(19)	31.7	(10)	30.3
Other Illicit Drugs								
Non-User	(659)	96.1	(96)	97.0	(379)	96.4	(184)	94.9
User	(27)	3.9	(3)	3.0	(14)	3.6	(10)	5.1
Unknown	(57)		(14)		(29)		(13)	
Quit[a]	(10)	37.0	(0)	0.0	(7)	50.0	(3)	30.0

*p<.05 **p<.01 ***p<.001

[a] Quit rates represent the percentage of users who quit.

Table VII

CLIENT CHARACTERISTICS AT INTAKE BY ETHNICITY

10/01/82 - 9/30/84 (N=743)

	White n=451		Black n=192		Hispanic n=100	
	(n)	%	(n)	%	(n)	%
Age at Birth***						
≤ 15	(47)	10.4	(46)	24.0	(20)	20.0
16-17	(262)	58.1	(107)	55.7	(54)	54.0
18+	(142)	31.5	(39)	20.3	(26)	26.0
Gravidity**						
0	(378)	84.6	(141)	75.0	(69)	69.7
1	(60)	13.4	(36)	19.1	(23)	23.2
2+	(9)	2.0	(11)	5.9	(7)	7.1
Parity*						
0	(432)	95.8	(177)	92.2	(88)	88.0
1	(19)	4.2	(12)	6.3	(11)	11.0
2+	(0)	0.0	(3)	1.5	(1)	1.0
Birth Control Method						
None	(226)	58.4	(91)	54.5	(63)	70.0
Prescription	(106)	27.4	(55)	32.9	(20)	22.2
Non-Prescription	(55)	14.2	(21)	12.6	(7)	7.8
Unknown	(64)		(25)		(10)	
Marital Status***						
Single	(400)	88.7	(191)	99.5	(81)	81.0
Ever Married	(51)	11.3	(1)	0.5	(19)	19.0
Unknown	(0)		(0)		(0)	
Living Arrangements***						
Alone or with Partner	(89)	19.8	(2)	1.0	(26)	26.0
Client's Mother	(126)	28.1	(118)	61.4	(31)	31.0
Two Parent Home	(176)	39.2	(36)	18.8	(16)	16.0
Other	(58)	12.9	(36)	18.8	(27)	27.0
Unknown	(2)					
Educational Status***						
In School	(244)	54.3	(153)	79.7	(39)	39.0
Out of School	(205)	45.7	(39)	20.3	(61)	61.0
Unknown	(2)					
Vocational Training**						
In Training	(26)	5.8	(2)	1.0	(0)	0.0
Completed	(8)	1.8	(7)	3.7	(3)	3.0
None	(412)	92.4	(182)	95.3	(96)	97.0
Unknown	(5)		(1)		(1)	

*p<.05 **p<.01 ***p<.001

Table VIII

SUBSTANCE USE REPORTED AT BIRTH BY ETHNICITY

10/01/82 - 9/30/84 (N=743)

	Total		White n=451		Black n=192		Hispanic n=100	
	(n)	%	(n)	%	(n)	%	(n)	%
Smoking (Tobacco)***								
Non-User	(382)	55.1	(181)	43.3	(125)	69.4	(76)	80.0
Use	(311)	44.9	(237)	56.7	(55)	30.6	(19)	20.0
Unknown	(50)		(33)		(12)		(5)	
Quit[a]	(38)	12.2	(22)	9.3	(14)	25.5	(2)	10.5
Alcohol***								
Non-User	(485)	70.5	(262)	63.3	(142)	78.9	(81)	86.2
Use	(203)	29.5	(152)	36.7	(38)	21.1	(13)	13.8
Unknown	(55)		(37)	9.9	(12)	31.6	(6)	15.4
Quit[a]	(29)	14.3	(15)	9.9	(12)	31.6	(2)	15.4
Marijuana								
Non-User	(581)	84.4	(348)	84.1	(147)	81.7	(86)	91.5
Use	(107)	15.6	(66)	15.9	(33)	18.3	(8)	8.5
Unknown	(55)		(37)		(12)		(6)	
Quit[a]	(35)	32.7	(17)	25.8	(15)	45.6	(3)	37.5
Other Illicit Drugs								
Non-User	(659)	95.9	(391)	94.9	(177)	98.3	(91)	95.8
Use	(28)	4.1	(21)	5.1	(3)	1.7	(4)	4.2
Unknown	(56)		(39)		(12)		(5)	
Quit[a]	(11)	39.3	(8)	38.1	(1)	33.3	(2)	50.0

*p<.05 **p<.01 ***p<.001

[a] Quit rates represent the percent of users who quit.

Table IX

BIRTH OUTCOMES BY AGE

10/01/82 - 9/30/84 (N=743)

	Total		≤15 n=113		16-17 n=423		18+ n=207	
	(n)	%	(n)	%	(n)	%	(n)	%
Low Birthweight (≤ 2500g)	(75)	10.1	(10)	8.9	(40)	9.5	(25)	12.1
Adequacy of Care** [a]								
Adequate	(324)	44.1	(31)	27.9	(191)	45.9	(102)	49.3
Intermediate	(283)	38.5	(53)	47.8	(155)	37.0	(75)	36.2
Inadequate	(128)	17.4	(27)	24.3	(71)	17.1	(30)	14.5
Unknown	(8)		(2)		(6)			
Maternal Birth Complications								
None	(621)	83.6	(91)	80.5	(356)	84.2	(174)	84.1
One	(111)	14.9	(22)	19.5	(61)	14.4	(28)	13.5
Two or more	(11)	1.5	(0)	0.0	(6)	1.4	(5)	2.4
Inappropriate Weight Gain								
<22 lbs.	(54)	7.3	(8)	7.1	(29)	6.9	(17)	8.2
>36 lbs.	(119)	16.0	(15)	13.3	(69)	16.3	(36)	17.4
None	(570)	76.7	(90)	79.6	(325)	76.8	(154)	74.4
Cesarean Section	(82)	11.1	(15)	13.3	(49)	11.6	(18)	8.7

*p<.05 **p<.01 ***p<.001

[a] The adequacy of care variable is calculated using trimester of entry for prenatal care, the number of prenatal visits kept, and gestational weeks. The same formula is used for MAPPS that is used for the Massachusetts Vital Statistics.

Table X

BIRTH OUTCOMES BY ETHNICITY

10/01/82 - 9/30/84 (N=743)

	Total		White n=451		Black n=192		Hispanic n=100	
	(n)	%	(n)	%	(n)	%	(n)	%
Low Birthweight (≤ 2500g)	(75)	10.1	(45)	10.0	(22)	11.5	(8)	8.0
Adequacy of Care*** [a]								
Adequate	(324)	44.1	(220)	49.3	(56)	29.5	(48)	48.5
Intermediate	(283)	38.5	(155)	34.8	(90)	47.4	(38)	38.4
Inadequate	(128)	17.4	(71)	15.9	(44)	23.1	(13)	13.1
Unknown	(8)		(5)		(2)		(1)	
Maternal Birth Complications								
None	(621)	83.6	(384)	85.1	(154)	80.2	(83)	83.0
One	(111)	14.9	(61)	13.5	(34)	17.7	(16)	16.0
Two or More	(11)	1.5	(6)	1.3	(4)	2.1	(1)	1.0
Inappropriate Weight Gain								
<22 lbs.	(54)	7.3	(35)	7.8	(11)	5.7	(8)	8.0
>36 lbs.*	(120)	16.2	(87)	19.3	(20)	10.4	(13)	13.0
Cesarean Section*	(82)	11.0	(43)	9.5	(21)	10.9	(18)	18.0

*p<.05 **p<.01 ***p<.001

[a] See Table IX for definition of the adequacy of care variable.

Table XI

FACTORS INFLUENCING ADEQUACY OF CARE[a]

UNSTANDARDIZED REGRESSION COEFFICIENTS

	Model 1[b] (N=678)	Model 2[c] (N=682)
Age at Delivery in Years	0.024*	0.019
Ethnicity 1=Black 0=All Others	-0.081*	-0.074*
Parity 1=1 or More Births 0=None	-0.019	
Medicaid at Intake 1=Receiving Medicaid 0=Not Receiving Medicaid	-0.029	
School Status 1=Not in School 0=In or Completed School	-0.036	
Substance Use 1=Uses 1 or More Drugs (alcohol, cigarettes, marijuana or other drugs) 0=No Use	0.007	
Prenatal Home Visits 1=1 or More Visits 0=No Visits	0.119***	0.113***
WIC 1=Receiving WIC 0=Not Receiving WIC	0.129***	0.114***
R^2 (Total Model)	0.071	0.064
F	6.387***	11.567***

*p<.05 **p<.01 ***p<.001

[a] For adequacy of care, 0=inadequate or no care; 1=adequate or intermediate care.

[b] Stepwise regression including all variables entered in order listed.

[c] Stepwise regression with variables which did not contribute significantly to R^2 in Model 1 deleted.

Table XII

FACTORS INFLUENCING BIRTHWEIGHT

UNSTANDARDIZED REGRESSION COEFFICIENTS[a]

	Model 1[b] (N=671)	Model 2[c] (N=707)
Age at Delivery in Years	0.038	0.075
Ethnicity 1=Black 0=All Others	-7.643***	-7.467***
Parity 1=1 or More Births 0=None	0.623	
Medicaid at Intake 1=Receiving Medicaid 0=Not Receiving Medicaid	0.748	
School Status 1=Not in School 0=In or Completed School	-2.665	
Substance Use 1=Uses 1 or More Substances (alcohol, cigarettes, marijuana or other drugs) 0=No Use	-3.281*	-3.302*
Adequacy of Care 1=Adequate or Intermediate Care 0=Inadequate or No Care	1.818*	2.312
Prenatal Home Visits 1=1 or More Visits 0=No Visits	3.360*	3.030*
WIC 1=Receiving WIC 0=Not Receiving WIC	-1.086	
R^2 (Total Model)	0.047	0.040
F	3.616***	5.911***

*p<.05 **p<.01 ***p<.001

[a] Birthweight in grams.

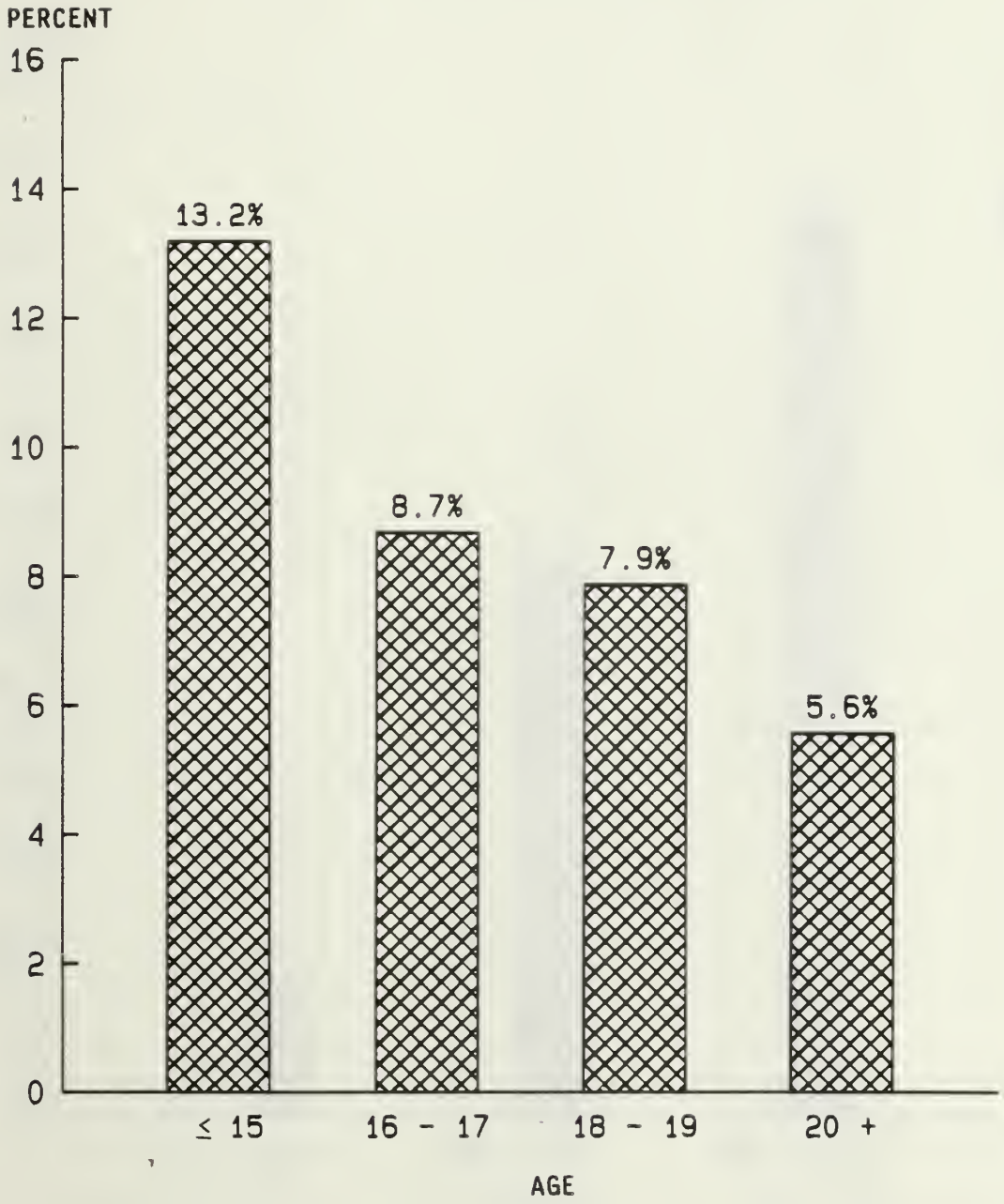
[b] Stepwise regression including all variables entered in order listed.

[c] Stepwise regression with variables which did not contribute significantly to R^2 in Model 1 deleted.

FIGURE 1

PERCENTAGE OF LOW BIRTHWEIGHT* INFANTS BY MATERNAL AGE

MASSACHUSETTS, 1983



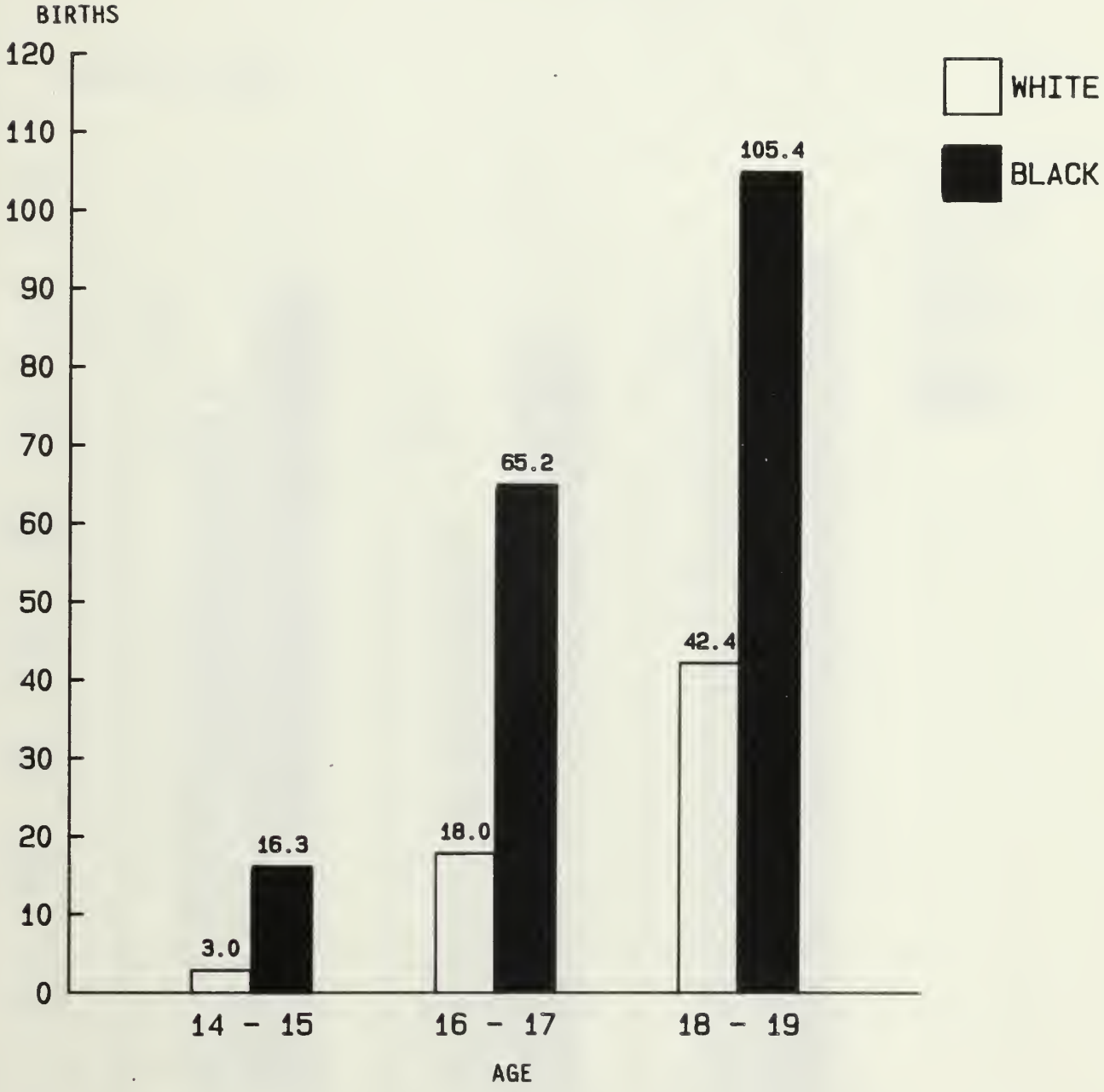
SOURCE: DIVISION OF HEALTH STATISTICS AND RESEARCH, MDPH

* LOW BIRTHWEIGHT IS <2500 GRAMS

FIGURE 2

TEENAGE BIRTH RATES* BY AGE AND RACE

MASSACHUSETTS, 1980



SOURCE: DIVISION OF HEALTH STATISTICS AND RESEARCH, MDPH

* BIRTHS PER THOUSAND FEMALES IN EACH CATEGORY

FIGURE 3

GOVERNMENT FINANCIAL SUPPORT AT BIRTH

BY AGE

10/01/82 - 9/30/84 (N=743)

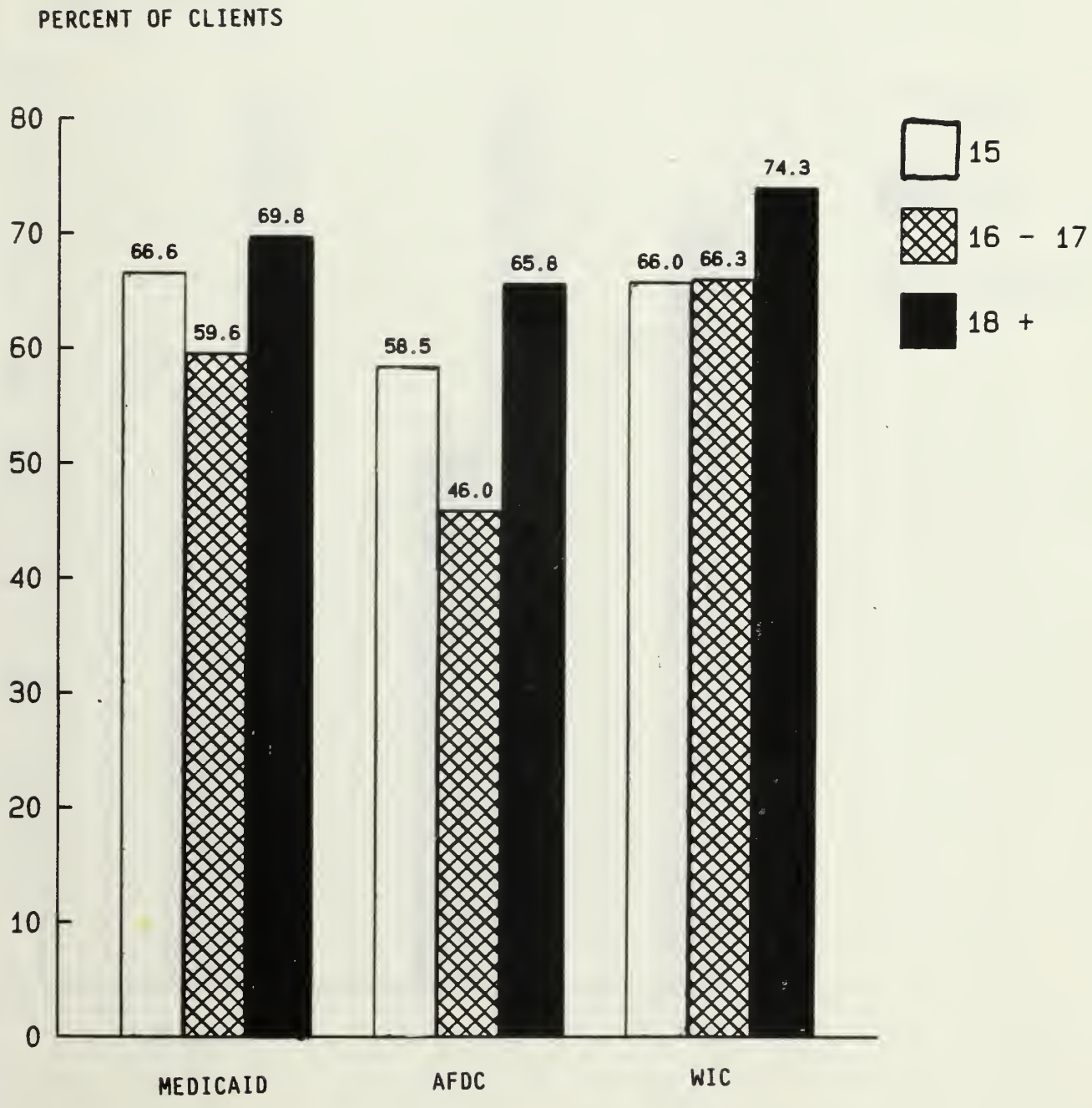


FIGURE 4

GOVERNMENT FINANCIAL SUPPORT AT BIRTH

BY ETHNICITY

10/01/82 - 9/30/84 (N=743)

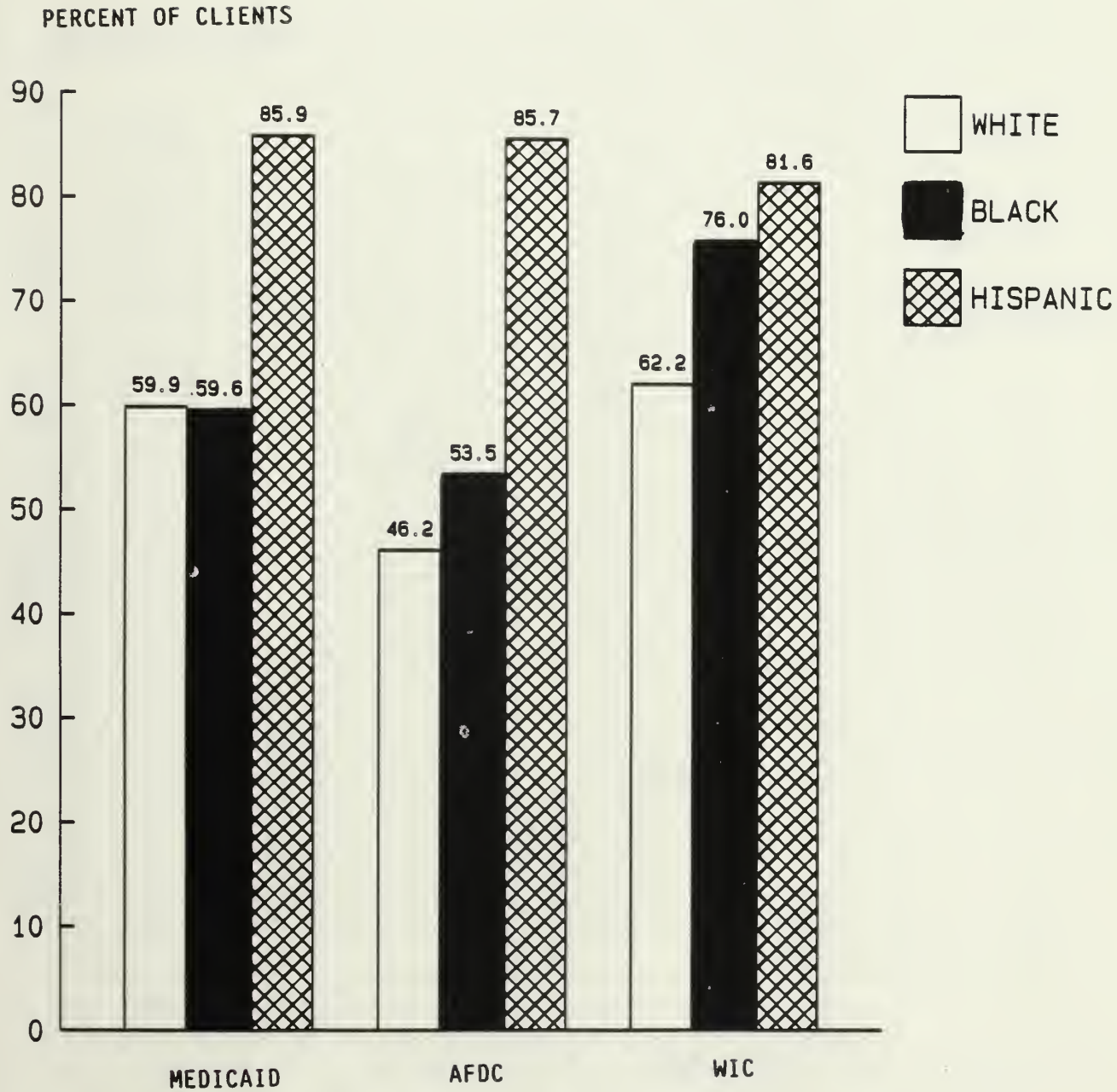


FIGURE 5

SUBSTANCE USE RATES

AT BIRTH BY ETHNICITY

10/01/82 - 9/30/84 (N=743)

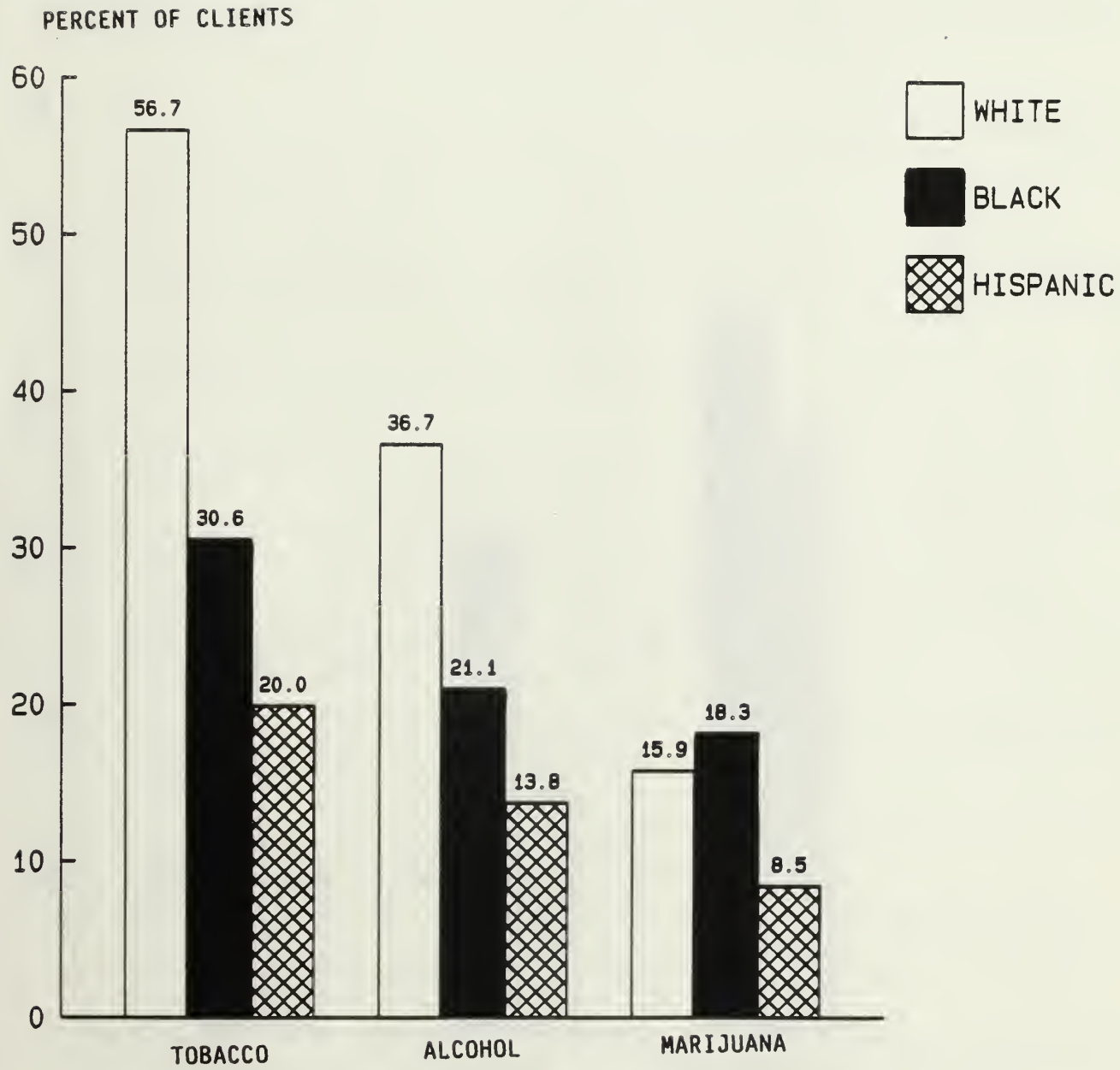
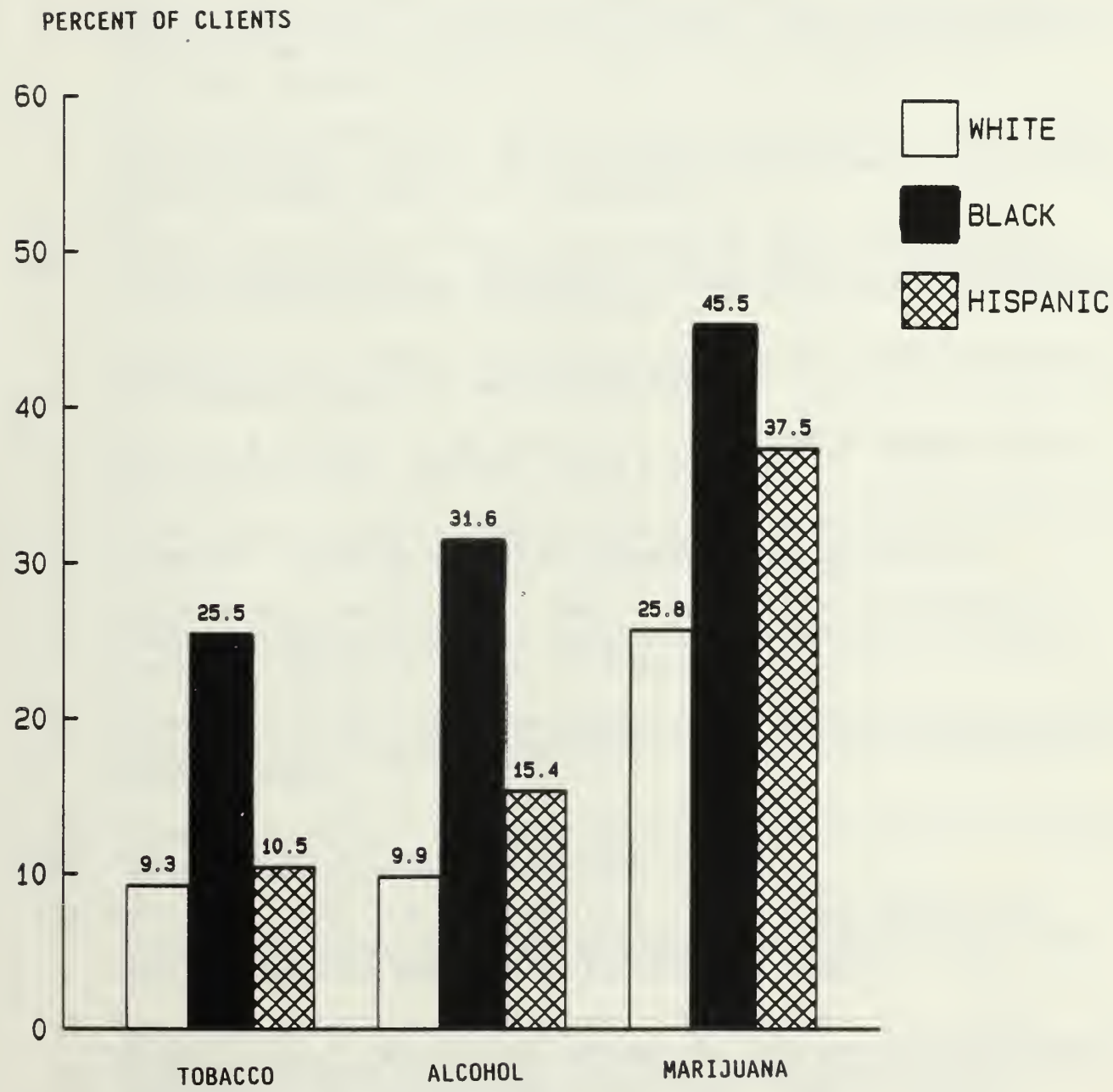


FIGURE 6

SUBSTANCE USE QUIT RATES

BY ETHNICITY

10/01/82 - 9/30/84 (N=743)



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